Colorado Department of Public Health and Environment (CDPHE) Water Quality Control Division (WQCD) Stormwater Program (303) 692-3500

Recommended Resources for Phase II

The following is a list of resources that the Division recommends for developing and implementing a Phase II stormwater program. An "*" prior to an entry indicates a resource that has been found to be particularly useful.

A. U.S. EPA

A.1. *EPA Stormwater Phase II

- A very useful web page with a lot of information and good FAQs. Resources available include: 14 fact sheets covering the Small MS4 Program, the Six Minimum Measures, Permitting and Reporting, the Construction Program, and the Industrial "No Exposure" Waiver. Available from the net at http://cfpub1.epa.gov/npdes/pubs.cfm?program_id=6
- EPA's Stormwater Phase II Compliance Assistance Guide, March 2000. This publication can be downloaded at http://www.cicacenter.org/or-stormwater.html or at http://www.epa.gov/npdes/pubs/comguide/pdf. Warning: This is a large document, nearly 100 pages long.
- A copy of the EPA regulation, which includes an extensive discussion in the preamble, is available at http://cfpub1.epa.gov/npdes/regresult.cfm?program_id=6&view=all&type=1
- More information can be obtained by calling EPA's Storm Water Phase II Rule Hotline at (202) 260-7786 sending an e-mail to sw2@epa.gov.
- *EPA's final Menu of BMPs this has been updated to include another 20 new fact sheets to highlight innovative practices. http://www.epa.gov/npdes/menuofbmps
- BMPs for unpaved roads http://www.epa.gov/owow/nps/unpavedroads.html
- EPA's guidance on measurable goals –
 http://www.epa.gov/npdes/stormwater/measurablegoals/index.htm
- EPA's guide for State and Local Government Guide to Environmental Program Funding Alternatives http://www.epa.gov/owow/nps/MMGI/funding.html
- EPA Region 8, which includes Colorado, maintains information for MS4 permits. Their website is located at http://www.epa.gov/region8/water/stormwater/municipal.html

B. GENERAL BMPS

B.1. *Center for Watershed Protection

The Center provides objective and scientifically sound information on effective techniques to protect and restore urban watersheds. Workshops, journals, publications and links are available. There is a strong focus on Low Impact Development. Also includes a good section on model ordinances and several quality reference books. http://www.cwp.org

- Some recommended publications:
 - The Practice of Watershed Protection: Techniques for Protecting and Restoring Urban Watersheds Consists of 150 articles on urban watershed protection
 - -Rapid Watershed Planning Handbook A guide to creating an effective watershed plan quickly and at a low cost.
 - -Better Site Design: A Handbook for Changing Development Rules in Your Community \$35 This handbook outlines 22 guidelines for better developments and provides detailed rationale for each principle. Includes a sample Codes & Ordinances Worksheet.
 - The Center for Watershed Protection permits free downloads of several publications such as *Stormwater BMP Design for Cold Climates* and **Illicit Discharge Detection and Elimination Guidance Manual*.

B.2. Denver Regional Council of Governments (DRCOG)

A regional website, designed to assist Colorado Phase II municipalities in application and program development. Includes local case studies and ordinances.

http://www.drcog.com/index.cfm?page=WaterResources

B.3. Know Your Watershed

Tips, tools, and resources for watershed management. Sponsored by the Conservation Technology Information Center (CTIC) at Purdue University. Available publications include *Putting Together a Watershed Management Plan: A Guide for Watershed Partnerships*.

http://www.ctic.purdue.edu/KYW/

B.4. Municipal Research and Services Center

Storm and Surface Water Management Program for the State of Washington includes extensive information on funding, public education, construction, BMPs, research.

http://www.mrsc.org/environment/water/water-s/SW-main.htm

B.5. National Resource Defense Council (NRDC) Stormwater Strategies

Report available for download from the net on community responses to runoff pollution, including 100 case studies. They also have an extensive links section.

- Stormwater strategies are available at http://www.nrdc.org/water/pollution/storm/stoinx.asp
- Steps to clean up pollution: http://www.nrdc.org/water/pollution/gsteps.asp

B.6. International Stormwater Best Management Practices (BMP) Database (EPA/ASCE, 4/01)

Database of monitoring results showing effectiveness of structural and non-structural BMPs. Currently, the database and web site do not include much analysis of the data; this will be added in the future. Data contributions are being solicited on an on-going basis. Data contributions and evaluations are available as a free-download on the web at http://www.bmpdatabase.org

B.7. *Proceedings from the National Conference on Tools for Urban Water Resources Management & Protection (EPA/625/R-00/001 2/2000)

Proceedings from a recent conference with several quality papers on topics such as Phase II cost estimates, developing a stormwater utility fee, tools for eliminating illicit connections, public information projects, and many more directly applicable to Phase II and the six minimum measures. Highly recommended.

The report is available free of charge from the EPA; call (800) 490-9198. Or you can download the proceedings by visiting http://nepis.epa.gov/ then conduct a simple search using the following key words: urban, water, resources and management.

B.8. Stormwater Authority

A good source of technical information on stormwater. Includes a large library of technical papers.

http://www.stormwaterauthority.org/

B.9. *Texas Nonpoint Source Book

A web site with stormwater information geared to public works professionals and other interested parties. A great resource for stormwater BMP information.

http://www.txnpsbook.org

B.10*Urban Drainage and Flood Control District (UDFCD) Drainage Criteria Manual (Vols. 1-3)

The UDFCD manual for stormwater management was updated in 2001 and 2004. This stormwater BMP manual was developed for the Denver metro area and includes regional, residential, industrial, commercial, and construction BMPs. The manuals are highly recommended and may be downloaded for free from their website. Highly recommended.

http://www.udfcd.org/downloads/down critmanual.htm

C. GENERAL PHASE II PROGRAM GUIDANCE

See Also:

- Item B.2. The Denver Regional Council of Governments website is specifically designed for Colorado municipalities.
- Item B.9. The Texas Nonpoint Source Book contains guidance on program planning and implementation.

C.1. California Model Urban Runoff Program (MURP)

- A how-to guide for developing urban runoff programs for small municipalities. Developed by the City of Monterey, California. Available for free on the internet at http://www.coastal.ca.gov/la/murp.html.
- The MURP Internet Resources List is extensive, containing links for subjects such as urban runoff program development, model water quality ordinances, urban runoff program funding and many more. http://www.coastal.ca.gov/la/docs/bmp.pdf

C.2. *American Public Works Association (APWA) – Designing and Implementing an Effective Storm Water Management Program

This manual contains over 200 pages of detailed guidance, samples, and case studies, featuring the NPDES Phase II requirements. Several other storm water publications including CD-ROMs about Phase II case studies and setting measurable goals are available.

http://www.apwa.net/bookstore/detail.asp?PC=PB.ASWT

The APWA maintains an extensive library on water resources:

http://www.apwa.net/bookstore/category.asp?Category=Water%20Resources&p=1

C.3. Model Ordinances

- Stormwater Manager's Resource Center site maintains an extensive list of model ordinances: http://www.stormwatercenter.net/Manual_Builder/stormwater_ordinance.htm
- EPA site: http://www.epa.gov/owow/nps/ordinance/stormwater.htm
- Local Government Environmental Assistance Network: http://www.lgean.org
- Denver Regional Council of Governments (includes examples of local ordinances):
 http://www.drcog.org/reg growth/water/StormWater.htm
- City of Los Angeles, California: http://www.lacity.org/SAN/wpd/WPD/residents/ordinance.htm
- City of Seattle, Washington: http://www.seattle.gov/dclu/codes/sgdccode.htm
- City of Austin, Texas (Good example of a stream protection ordinance as well as design manual): http://www.ci.austin.tx.us/watershed/

D. TOOLS FOR THE SIX MINIMUM MEASURES

See Also:

- Item A.1. The EPA has developed Fact Sheets and a BMP Menu for each of the Six Minimum Measures, as well as guidance on developing Measurable Goals.
- Item B.2. The Denver Regional Council of Governments website is specifically designed for Colorado municipalities.

D.1. Public Education & Outreach

See Also:

- Item B.1. The Center for Watershed Protection includes education & outreach in their watershed planning publications.
- Item B.7. These proceedings include several papers covering successful education & outreach.
- Item B.9. The Texas Nonpoint Source Book contains guidance on planning and implementing education and outreach programs and examples of materials available for use.
- Item C.1. The MURP covers public education.

D.1.i. League of Women Voters Education Fund – Water Resources

- Information regarding educational programs and resources offered through the League of Women Voters, including the Wetlands Citizen Education Program. The League of Women Voters is very active in stormwater education in Colorado. http://www.ourwater.org

- Under the guidance of the League of Women Voters with funding from the Colorado Department of Public Health and Environment and technical expertise from Colorado State University Cooperative Extension, AWARE Colorado was created to inform local decision makers about water quality. A free publication, *Water Protection Toolkit for Local Officials: Connecting Land Use with Water Quality*, can be downloaded at http://www.awarecolorado.org/toolkit.pdf

D.1.ii EPA: Getting in Step

The Council State Governments with the EPA created *Getting in Step: A Guide to Effective Outreach in Your Watershed*. The guide provides tools for watershed groups and public agencies to develop and implement an effective outreach http://www.epa.gov/owow/waters http://www.epa.gov/owow/waters

D.1.iii *Colorado Foundation for Water Education

A nonprofit devoted to promoting "better understanding of Colorado's water resources and issues." Contains an extensive listing of educational resources and products for everyone from schools to cities and counties. http://cfwe.org/

D.1.iv *Teacher Resources for Introducing Urban Stormwater Quality Concepts to the Classroom

Developed by the Colorado Water Quality Control Division as a resource for K-12 schools. Including example lesson plans meeting Colorado standards for science, geography and civics. http://www.cdphe.state.co.us/wq/PermitsUnit/urbansw.pdf

D.2. Public Involvement/Participation

See:

- Item B.7. These proceedings include papers covering successful public involvement programs.
- Item C.2. This manual includes guidance on building community support with stakeholder involvement.

D.2.i Adopt a Watershed

The EPA is leading an "Adopt Your Watershed" campaign. Through this effort, EPA challenges citizens and organizations to join organizations who are working to protect and restore our valuable rivers, streams, wetlands, lakes, ground water, and estuaries. The database contains more than 4,000 watershed organizations across the country. http://www.epa.gov/adopt/

D.3. Illicit Discharge Detection & Elimination

See Also:

- Item B.1. The Center for Watershed Protection includes an illicit discharge detection guidance manual in their free downloadable publications.
- Item B.7. These proceedings include papers covering illicit discharge detection tools and programs.
- Item C.3. There are many options listed for finding appropriate model ordinances.

D.3.i <u>Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems – A User's Guide (EPA/600/R-92/238)</u>

The EPA released this manual in 1992 and can be downloaded for free at http://www.epa.gov/ORD/NRMRL/Pubs/600r92238/600r92238.pdf

D.3.ii. Rouge River National Wet Weather Demonstration Project – Illicit Connection Reports

The Rouge River National Wet Weather Demonstration Project began in 1992 and is a comprehensive program to manage wet weather pollution to restore the water quality of the Rouge River. The project contains a wealth of technical information regarding sewer overflow control. http://www.rougeriver.com/

D.4. Construction Site Stormwater Runoff Control

See Also:

- Items B.6, B.7, B.8, B.9 and B.10 All of these have good BMP information for construction site controls. The UDFCD Volume 3 (Item B.10) is highly recommended as a resource for construction site BMPs.
- Item B.7. and B.9.— Both of these contain guidance on setting up Construction Site Stormwater Runoff Control programs.
- Item C.3. There are many options listed for finding appropriate model ordinances.

D.4.i. "Building for a Cleaner Environment"

The Colorado Department of Public Health and Environment created this ready-mix washout training DVD and manual. It is available for free from the CDPHE.

• Contact Matt Czahor at (303) 692-3575, or matthew.czahor@state.co.us

D.4.ii. *Colorado Contractors Association (CCA) – Stormwater Best Management Practices Course

The course material is similar to item D.4.v. and includes CDOT certification.

Contact the CCA at http://www.coloradocontractors.org or (303) 290-6611. The course costs \$155.

D.4.iii. Colorado Department of Transportation (CDOT) Erosion Control and Stormwater Quality Guide

A guide for controlling stormwater pollution from construction sites. The focus is on highway projects, but the BMPs are generally applicable. A laminated pocket guide is also available.

 Contact CDOT at (303) 757-9313. Regular guide is \$20 and a laminated pocket guide costs \$10.

D.4.iv. <u>International Erosion Control Association</u>

This website provides information regarding news, conferences, training and exhibits regarding erosion control, as well as numerous links to other sites. The association produces a publication, *Erosion Control Journal*.

http://ieca.org/

D.4.v. *Rocky Mountain Education Center – Stormwater Management and Erosion Control Course

Rocky Mountain Education Center offers several one-day courses, with an optional additional half-day in the field, on the principles and practices of erosion and sediment control. Recommended for municipal erosion control inspectors and those practicing erosion control in the field. This course is required for the CDOT certified erosion control supervisor certification. Course is given at Red Rocks Community College in Lakewood and is referenced as CETC #150.

 Contact the Rocky Mountain Education Center at (800) 933-86394 or on the web at http://www.rrcc.edu/rmec. Cost is \$175.

D.4.vi. Mountain Driveways Best Management Practices Manual.

Prepared by Wright Water Engineers and Denver Regional Council of Governments in September 1999 for the Colorado Nonpoint Source Council, the manual includes guidelines on application of BMPs to driveway construction in mountain areas. Addresses special considerations such as steep slopes, road drainage, and vegetation for limited growing season

in mountainous areas. A free download of the manual is available at http://www.nwc.cog.co.us/documents/Mountain%20Driveways%20BMPs.pdf

D.5. Post-Construction Stormwater Management

See Also:

- Item B.1. The Center for Watershed protection has extensive information on BMPs for post-construction runoff controls, as well as guidance on how to develop your municipal program. This is a highly recommended source for information on this minimum measure.
- Item B.6. Although not complete, the database does contain some data on the effectiveness of post-construction BMPs.
- Item B.7. These proceedings include papers on Post-Construction Stormwater Management practices and programs.
- Item B.10. The UDFCD Volume 3 is highly recommended as a resource for post-construction BMPs.
- Item C.3. There are many options listed for finding appropriate model ordinances.

D.5.i. <u>Growing Greener: Putting Conservation into Local Plans and Ordinances by Randall Arendt</u>

Written from a land planning perspective, describes concepts of cluster development (low impact development) and benefits to drainage and surface water quality. Includes description of ordinances and zoning processes for implementation. This book is offered for sale by numerous websites.

D.5.ii. Low Impact Development

Low Impact Development: An Integrated Design Approach (EPA 841-B-00-003) was prepared by local planners, engineers, developers and elected officials. The manual details how to develop and implement LID methods from an integrated design perspective. Low Impact Development Hydrologic Analysis (EPA 841-B-00-002) is the companion document. It contains methodology that can be used to estimate changes in site hydrology due to new development, and also to design appropriate treatment systems to maintain the predevelopment hydrology of the site. Both documents can be downloaded for free at http://www.epa.gov/owow/nps/lid/

The Low Impact Development Center provides watershed managers with a new set of tools and techniques that can be used to meet regulatory and receiving water protection program goals for urban retrofits, re-development projects, and new development sites. The non-profit organization is dedicated to the advancement of Low Impact Development technology. Case studies and detailed information for design, master planning, ordinance development and outreach. http://www.lowimpactdevelopment.org/

D.5.iii. Puget Sound Online – Water Quality Action Team

In 2005, the Puget Sound Action Team released its Low Impact Development: Technical Guidance for Puget Sound. The report and more information about LID are available at http://www.psat.wa.gov/Programs/LID.htm

Also worth examining is an extensive Water Quality Management Plan for the Puget Sound available at http://www.psat.wa.gov/Publications/manplan00/mp_index.htm

D.5.iv. <u>Guidelines for Water Quality Enhancement at Golf Courses through the Use of Best Management Practices</u>

In addition to recommendations on BMPs at the design stage, includes post-construction maintenance BMPs on Integrated Pest Management, irrigation management, turf grass fertilizer use, landscaping and vegetative practices. Prepared for the Colorado Nonpoint Source Task Force by Wright Water Engineers and Denver Regional Council of Governments,

free download of the report is available at http://www.nwc.cog.co.us/documents/Golf%20Course%20BMPs.pdf

D.6. Pollution Prevention/Good Housekeeping for Municipal Operations

See:

■ Items B.6., B.7., B.8., B.9., and B.10. – All of these have good information on BMPs for municipal operations. The UDFCD Volume 3 (Item B.10.) is highly recommended as a resource for structural municipal BMPs.

E. FINANCING STORMWATER MANAGEMENT

See Also:

- Item B.7. These proceedings include papers on administering and funding stormwater programs.
- Item B.9. The Texas Nonpoint Source Book contains guidance on setting up stormwater utilities.

E.1. Center for Urban Policy and the Environment, Indiana University

This website is designed to help communities find ways to pay for stormwater management projects.

http://stormwaterfinance.urbancenter.iupui.edu/home.htm

F. MORE TOOLS FOR LOCAL GOVERNMENTS

F.1. American Forests

American Forests is assessing urban forests across the country. They have developed a process called Urban Ecosystem Analysis (UEA) to map the structure of a land area. The UEA process involves a technical analysis of satellite data, the application of GIS computer software in order to calculate dollar benefits based on specific site conditions analyzing numerous variables including stormwater runoff. http://www.americanforests.org/resources/urbanforests/analysis.php

F.2. Storm Water Management Authority

The Storm Water Management Authority is a clearinghouse for local governments working together for clean water through education, engineering and information technology. http://www.swma.com/

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